

What is claimed is:

1. A method for retrieving data from multidimensional data, comprising the steps of:

5 providing a plurality of vectors having feature values in the multidimensional data;

transforming a specified retrieving condition into a retrieving query vector having a dimension equal to a dimension of the multidimensional data;

10 calculating distances between the retrieving query vector and potential vectors to be retrieved, said step of calculating distances includes calculating a distance between the retrieving query vector and a potential vector to be retrieved by serially adding a value corresponding to a subsequent component of each
15 vector for a subsequent dimension to a cumulative value when the cumulative value is less than the maximum value;

stopping said step of serially adding a value and skipping said step of calculating a distance when the cumulative value is greater than the maximum value;

20 retaining the distance calculated in said step of calculating when the cumulative value is less than the maximum value;

replacing the maximum value with the distance calculated in

said step of calculating, when the distance is less than the maximum value; and

outputting the multidimensional data retained in said step of retaining the distance after said steps of retaining and
5 replacing.

2. The method for retrieving data according to claim 1, further comprising the step of:

10 sorting components of the potential vectors to be retrieved based on variance values of the components of the potential vectors to be retrieved for respective dimensions before said step of calculating a distance,

wherein said step of calculating a distance starts by adding a component of the dimension having a greater variance value.

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3. The method for retrieving data according to claim 1, further comprising the step of:

transforming a coordinate system of a vector before said step of calculating a distance,

20 wherein said step of calculating a distance uses the vector obtained in said step of transforming.

4. The method for retrieving data according to claim 1,

wherein said step of providing a plurality of vectors includes storing the plurality of vectors in at least one of a local database and a database connected to a network; and

5 said steps of calculating and retaining use the data in at least one of the local database and a database connected to the network.

5. The method for retrieving data according to claim 1, wherein the data includes at least one of document data, voice data, music data and image data which includes at least one of a still image and a video image.

6. The method for retrieving data according to claim 1, wherein said method includes recognizing an image pattern.

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7. A method for retrieving related data from multidimensional data, comprising the steps of:

 providing a plurality of vectors having feature values in the multidimensional data;

20 transforming a specified retrieving condition into a retrieving query vector having a dimension equal to a dimension of the multidimensional data;

 calculating distances between the retrieving query vector

and potential vectors to be retrieved, said step of calculating distances includes calculating a distance between the retrieving query vector and a potential vector to be retrieved by serially adding a value corresponding to a subsequent component of each vector for a subsequent dimension to a cumulative value when the cumulative value is less than a maximum value;

stopping said step of serially adding a value and skipping said step of calculating a distance when the cumulative value is greater than the maximum value;

retaining the distance calculated in said step of calculating when the cumulative value is less than the maximum value;

replacing the maximum value with the distance calculated in said step of calculating, when the distance is less than the maximum value; and

outputting the multidimensional data retained in said step of retaining the distance.

8. The method for retrieving data according to claim 7, further comprising the step of:

sorting components of the potential vectors to be retrieved based on variance values of the components of the potential vectors to be retrieved for respective dimensions before said

step of calculating a distance,

wherein said step of calculating a distance starts by adding a component of the dimension having a greater variance value.

5 9. The method for retrieving data according to claim 7, further comprising the step of:

transforming a coordinate system of a vector before said step of calculating a distance,

wherein said step of calculating a distance uses the vector
10 obtained in said step of transforming.

10. The method for retrieving data according to claim 7, wherein said step of providing a plurality of vectors includes sorting a plurality of vectors in at least one of a local
15 database and a database connected to a network; and

said steps of calculating and retaining use the data in at least one of the local database and the database connected to a network.

20 11. The method for retrieving data according to claim 7, wherein the data includes at least one of document data, voice data, music data and image data which includes at least one of a still image and a video image.

12. The method for retrieving data according to claim 7,
wherein said method includes recognizing an image pattern.

5 13. An apparatus for retrieving data from a database having
multidimensional data including a plurality of vectors having
feature values, comprising:

an input portion for specifying a retrieving condition for
retrieving data from the database storing the multidimensional
10 data and for transforming the retrieving condition into a
retrieving query vector having a dimension equal to a dimension
of the multidimensional data;

a calculating portion for calculating a distance between the
retrieving query vector and a potential vector to be retrieved by
15 serially adding a value corresponding to a subsequent component
of each vector for a subsequent dimension to a cumulative value;

a memory portion for retaining a plurality of distances
calculated by said calculating portion;

an extracting portion for extracting a maximum value of the
20 plurality of the distances retained by said memory portion;

an updating portion for updating said memory portion by
replacing the maximum value with the distance calculated by said
calculating portion when the calculated distance is less than the

maximum value extracted by said extracting portion; and

5 a calculation stopping portion for comparing the cumulative value with the maximum value during calculating the distance between the retrieving query vector and the potential vectors to be retrieved by serially adding a value corresponding to a subsequent component of each vector for a subsequent dimension to the cumulative value, said calculation stopping portion stopping the addition of the subsequent component of the vector and skipping a calculation of the distance of a subsequent component
10 of the vector, when the cumulative value is greater than the maximum value.

14. The apparatus for retrieving data according to claim 13, wherein said calculating portion sorts components of the
15 potential vectors to be retrieved based on variance values of the components of the vectors to be retrieved for respective dimensions, before calculating the distance between the retrieving query vector and each potential vector to be retrieved, said calculating portion calculates the cumulative value by
20 adding a component for the dimension with a greater variance value.

15. The apparatus for retrieving data according to claim 13,

wherein said calculating portion includes a means for transforming a coordinate system of a vector before calculating the distance between the retrieving query vector and the potential vectors to be retrieved.

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16. The apparatus for retrieving data according to claim 13, further comprising a medium readable by a machine.

17. A program for retrieving data from a database having
10 multidimensional data including a plurality of vectors having feature values, comprising:

means for transforming a specified retrieving condition into a retrieving query vector having a dimension equal to a dimension of the multidimensional data;

15 means for calculating distances between the retrieving query vector and potential vectors to be retrieved including means for calculating a distance between the retrieving query vector and a potential vector to be retrieved by serially adding a value corresponding to a subsequent component of each vector for a
20 subsequent dimension to a cumulative value when the cumulative value is less than a maximum value;

means for stopping said means for calculating and skipping calculating a distance when the cumulative value is greater than

the maximum value;

means for retaining the distance calculated by said means for calculating when the cumulative value is less than the maximum value;

5 means for replacing the maximum value with the calculated distance for the potential vector to be retrieved when the distance is less than the maximum value; and

means for outputting the multidimensional data retained in said means for retaining.

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18. A program for retrieving data according to claim 17, wherein said means for retaining the distance includes means for retaining the distance when the distance is within a predetermined range.

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